First record of a Ponto-caspian *Knipowitschia* species (Gobiidae) in the Carpathian basin, Hungary

by

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RÉSUMÉ. - Premier signalement de l'espèce ponto-caspienne *Knipowitschia* (Gobiidae) dans le bassin des Carpates, Hongrie.

Un spécimen du gobie du Caucase *Knipowitschia caucasica* (Berg, 1916) a été capturé dans la région nord-est de la Hongrie, dans la section épipotamique de la rivière Szamos, en 2009. Il s'agit du premier signalement du genre *Knipowitschia* dans le bassin des Carpates, et le plus éloigné de l'estuaire de la mer Noire, donnant ainsi de nouvelles informations sur la dispersion du gobie du Caucase dans le système d'écoulement des eaux du Danube.

Key words. - Gobiidae - *Knipowitschia caucasica* - Szamos River - Danube drainage - First record.

The *Knipowitschia* genus has been regarded as of Ponto-Caspian origin with several species in the Black and Caspian seas and also in drainages of the Aegean, Ionian and Adriatic areas, some of them showing high degree of local and regional variation (Miller, 2004).

Knipowitschia caucasica (Berg, 1916) is the most widespread species of the genus, with Ponto-Caspian range (Berg, 1965) extended to the Aegean and eastern Ionian basin (Economidis and Miller, 1990; Ahnelt *et al*., 1995). Its presence in the eastern Adriatic coast was also confirmed (Kovačić and Pallaoro, 2003). *K. caucasica* is an euryhaline species with characteristics allowing wide geographical and ecological distribution (Kevrekidis *et al*., 1990): early maturity and polyphagus feeding habits. The species has existing freshwater populations in the Metsamor River, Armenia (Gabrielyan, 2001) and had occurred in the lower River Danube up to area at Calarasi (Oţel, 2007).

MATERIAL AND METHODS

A specimen of *K. caucasica* was collected in the Szamos River at km 39.750 (N 47.86642°; E 22.67633°), on 22 November 2009 (Fig. 1). The Szamos River belongs to the Danube drainage, having a 15,882 km^2 catchment area and totalling 415 km in length. The river collects the waters of the northern part of Transylvanian-basin. The investigated segment of the Szamos River has epipotamic character. At this section the riverbed is meandering, the medium flow rate is 120 m^3/s. The characteristic wetted width vary between 70 and 110 m, the depth at the current is about 2-4 m. The bottom at the current comprises gravel and sand, the ripal area is dominated by sand and clay with some sedimentation at the lentic areas. The riverbank is steeply carved at the outer curve of the meanders.

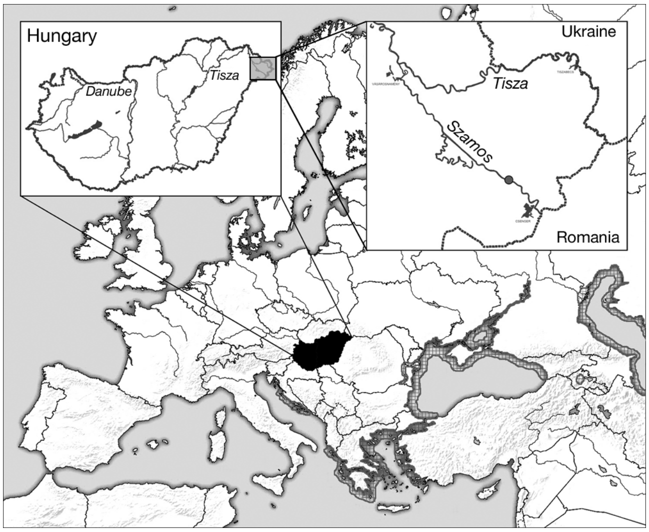

Figure 1. - Site of record of *K. caucasica* in the Szamos River.

Samplings were carried out using a Hans Grassl EL 64 II/GI electric sampling equipment from boat with handheld anode. The *K. caucasica* specimen collected by B. Halasi-Kovács was preserved in 70% ethyl alcohol and is deposited in the Hungarian Natural History Museum, Ichthyological Collection (HNHM), under lot No. 2011.1.1. Identification was aided by papers by Miller (1986, 2004), Economidis and Miller (1990) and Ahnelt *et al*. (1995). Meristic methods used were as per Miller (1988), terminology of lateral-line system follows Miller (1986).

RESULTS

Morphology (Fig. 2)

The specimen was identified as *K. caucasica* by the following characters: (1) anterior oculoscapular with single pore κ and paired pores λ; (2) no perianal organ (3) posterior oculoscapular canal present as furrow; (4) caudal fin symmetrical; (5) number of scales in lateral series 33. The specimen was identified as an adult female by the shape of urogenital papilla and the presence of Y shaped mark on chin.

The collected specimen is characterized as described here (see also Table I.). Body is elongated (H/SL 23.6; CP/SL 27.8) and low (Vd/SL 17.4; CPd/SL: 7.7), head is small (H/SL 23.6), with short postorbital distance (PO/H: 47.5) compared to females noted by Kovačić and Pallaoro (2003) and Miller (2004). D1 VII; D2 I/7;

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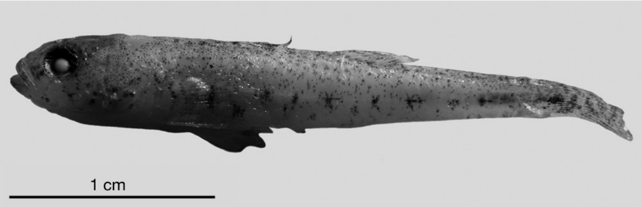

Figure 2. - *Knipowitschia caucasica,* specimen from the Szamos River.

Table I. - Morphometric data of *Knipowitschia caucasica* from the Szamos River.

Morphometric proportions	Data (mm)	% SL
Total length (TL)	30.0	-
Standard length (SL)	25.9	-
Head length (H)	6.1	23.6
Caudal peduncle length (CP)	7.2	27.8
Pectoral fin length (Pl)	5.9	22.8
Ventral fin length (Vl)	6.1	23.6
Caudal fin length (Cl)	4.1	15.8
Body depth at anal fin origin (Ad)	3.9	15.1
Body depth at ventral fin origin (Vd)	4.5	17.4
Head depth (Hd)	3.0	11.6
Caudal peduncle depth (CPd)	2.0	7.7
Body width at anal fin origin (Aw)	2.6	10.0
Head width (Hw)	3.6	13.9
Eye diameter (E)	1.7	6.6
Interorbital width (I)	1.0	3.9
Predorsal distance (PD)	8.8	34.0
Preorbital distance (PrO)	1.5	5.8
Postorbital distance (PO)	2.9	11.2

A I/7; P 16; C symmetrical, rounded; V rounded, rear edge close to anus. The body covered with ctenoid scales from axilla to origin of caudal fin. Head, back to the origin of D2 and breast are naked. Scales in lateral series (LL) are 33, in transverse series (TR) are 7.

The lateral line system could not be completely defined due to the condition of the preserved specimen. Despite, the following was observed: the anterior oculoscapular canal begins with a paired λ pores and ends in interorbit with single pore κ; posterior oculoscapular canal present as furrow on both sides, but ρ_1 and ρ_2 are absent; preopercular canal present with γ and ε pores.

The body of the preserved specimen has pale yellowish coloration with sprinkled pigmentation more dense on dorsal part of body from the medial section and eight black blotches along the lateral midline. Head has distinct preorbital and suborbital bars and mental blotch. Evident dark bands on D1, less conspicuous band on D2, vertical striates on C. P, V, A pale, except melanophores along the base of A.

Geographical and environmental observations

The recently recorded occurrence of *K. caucasica* is 1,940 km from the Danube River Black Sea estuary; through the Danube River (1,214 km), the Tisza River (686 km) and the Szamos River (40 km). The location of the specimen in the Szamos River is characterized by medium conductivity (600 µS/cm). The riverine water body is a lentic habitat with 1.7 m depth, slow flow speed, sand-clay bottom and artificial stoned embankment.

DISCUSSION

Based on morphological characters the examined specimen can be identified as *K. caucasica*. The observed parameters of the species correspond to that of published by Economidis and Miller (1990), Ahnelt *et al.* (1995) and Kovačić and Pallaoro (2003). The recent record from an epipotamic zone of the River Szamos is geographically far from the known distribution of the species and regarded as the farthermost occurrence away from River Danube's Black Sea estuaries, even taking into consideration the Armenian *K. caucasica* record of Gabrielyan (2001). The habitat-type of the Szamos river section is also different from that of previously reported locations (Kevrekidis *et al.*, 1990; Ahnelt *et al.*, 1995; Kovačić and Pallaoro, 2003). The occurrence of *K. caucasica* in a riverine ecosystem confirms the wide ecological tolerance of the species and its ability to develop freshwater populations. Although the isolated record presented in this paper may come from rather an accidental introduction than upstream migration of the species, the appearance of the population in the Carpathian basin provides fresh information on the dispersion pattern of the Ponto-Caspian gobiid species in the Danube drainage.

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